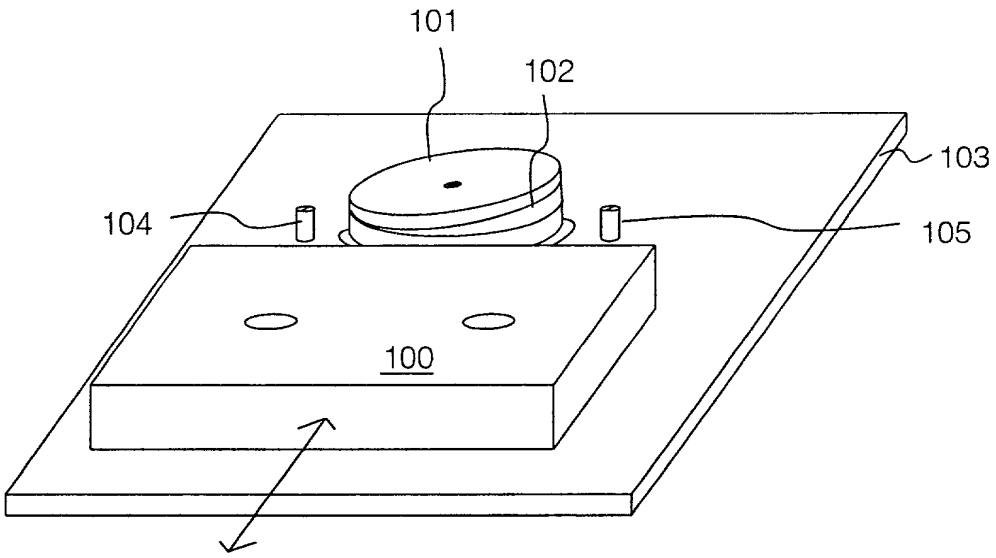


Fig. 1
(Prior Art)

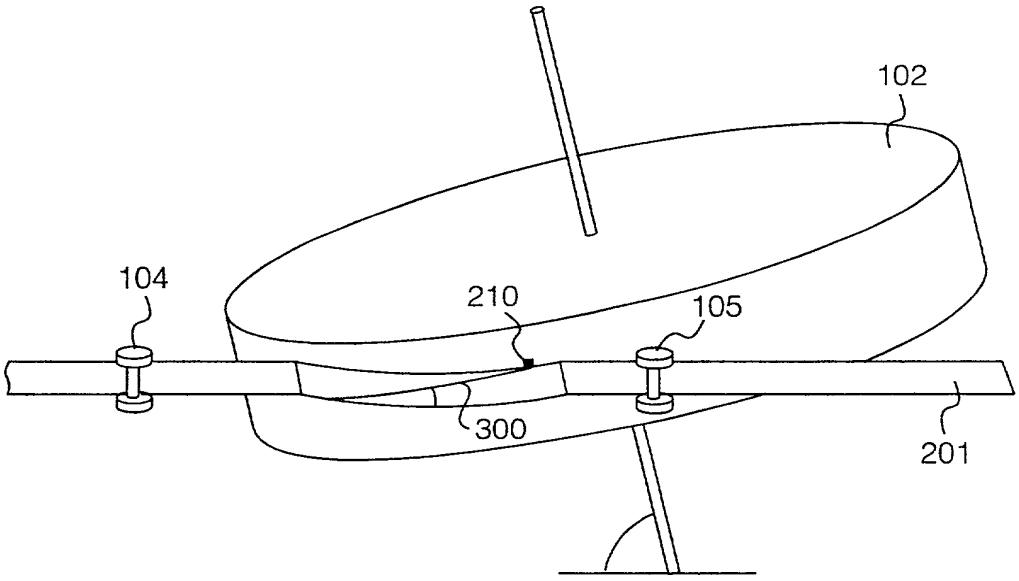


Fig. 3
(Prior Art)

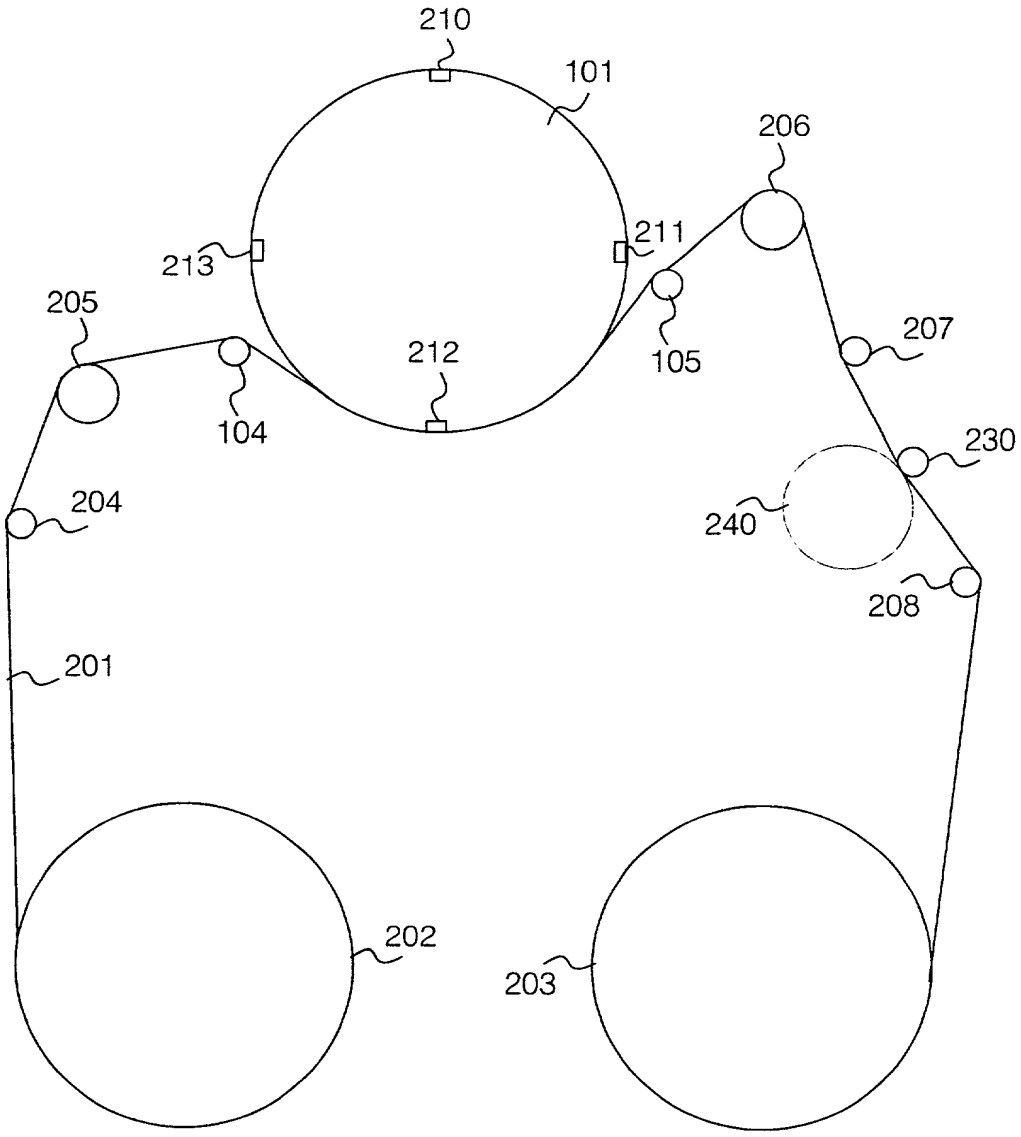


Fig. 2
(Prior Art)

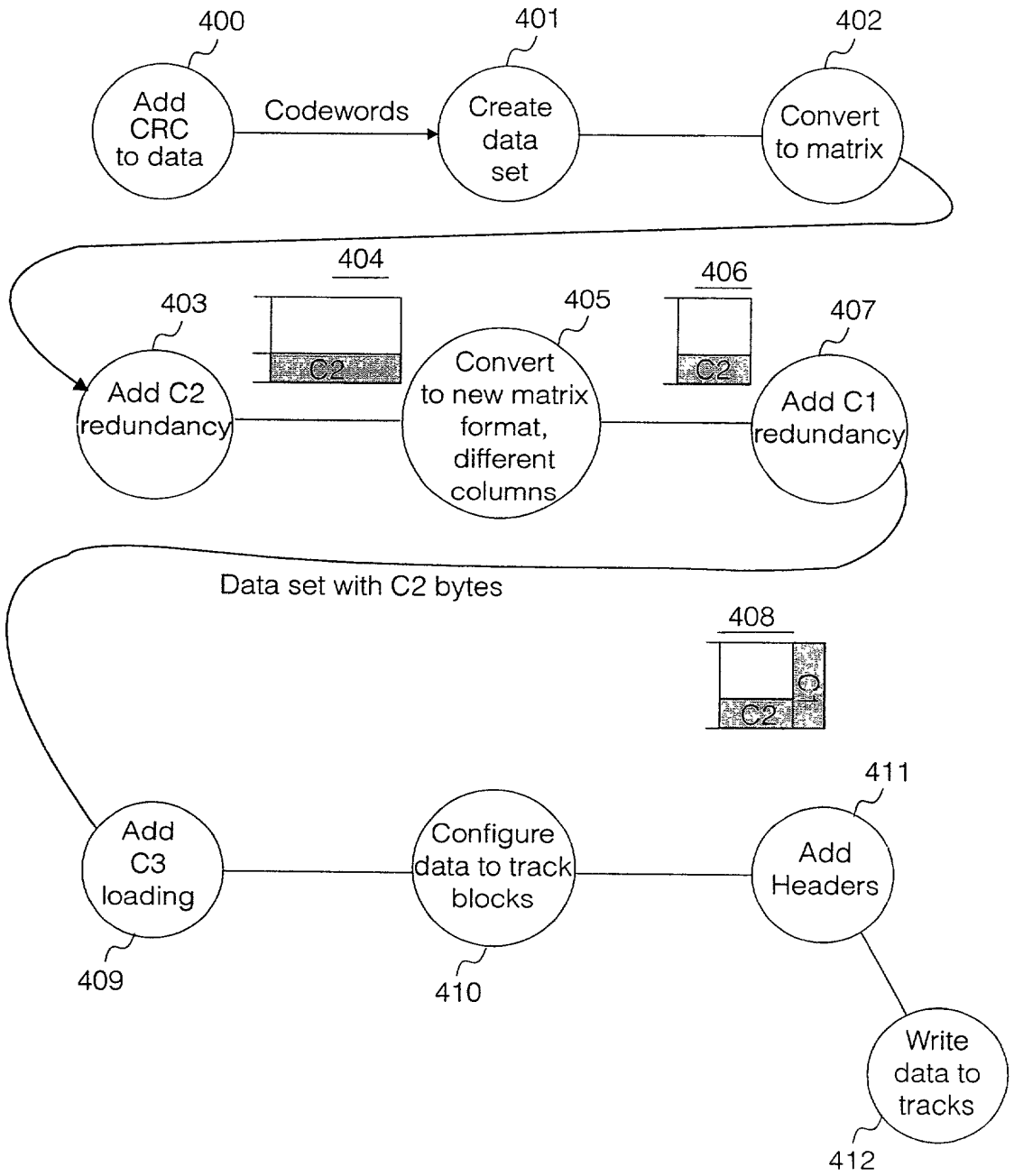


Fig. 4
(Prior Art)

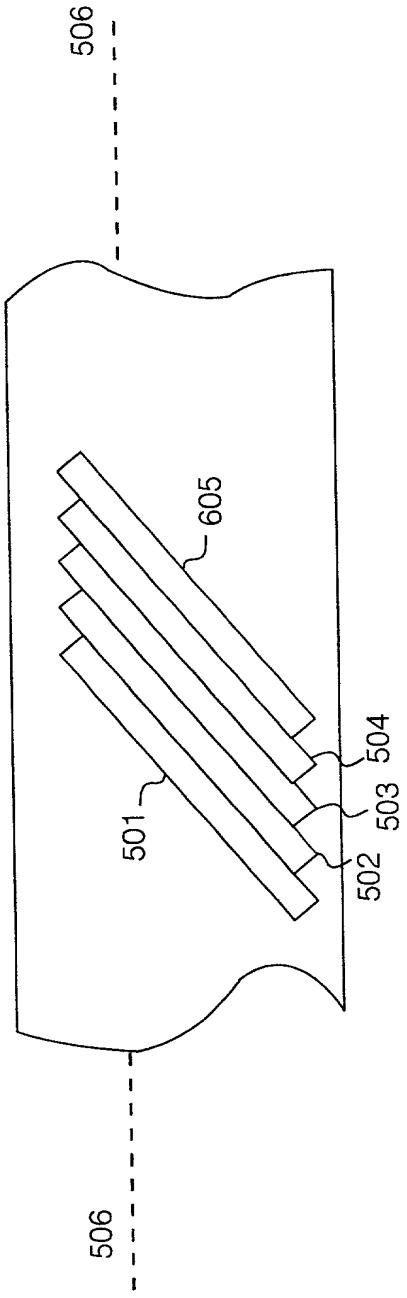


Fig. 5
(Prior Art)

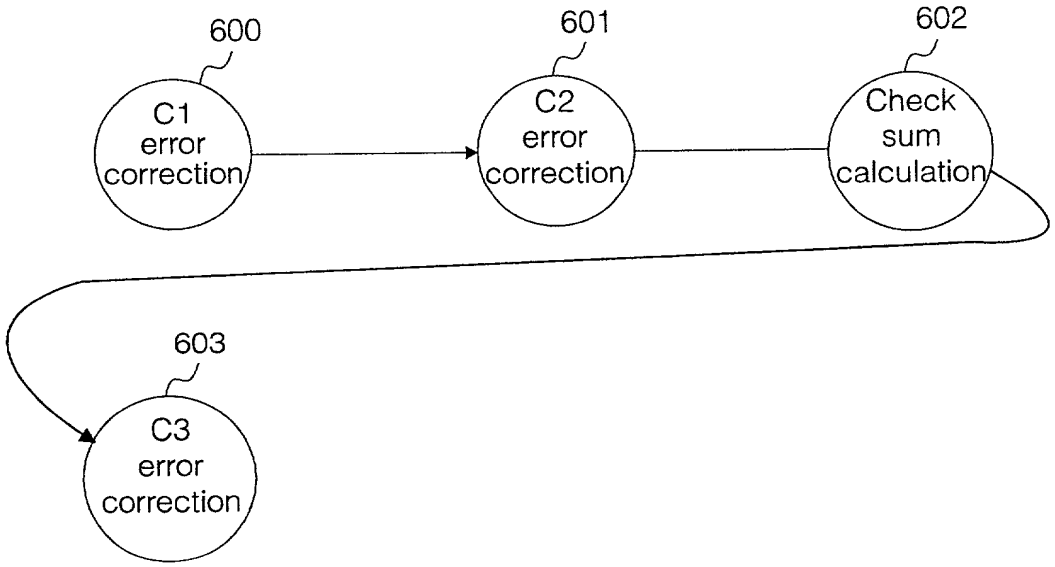


Fig. 6
(Prior Art)

$D_0, D_1, D_2, D_3, \ldots\ldots\ldots D_n$

$0 \leqslant D_i \leqslant 255$

DDS-4 Checksum

$$= \text{16 least significant bits of } \sum_{i=0}^{n} D_i$$

Fig. 7
(Prior Art)

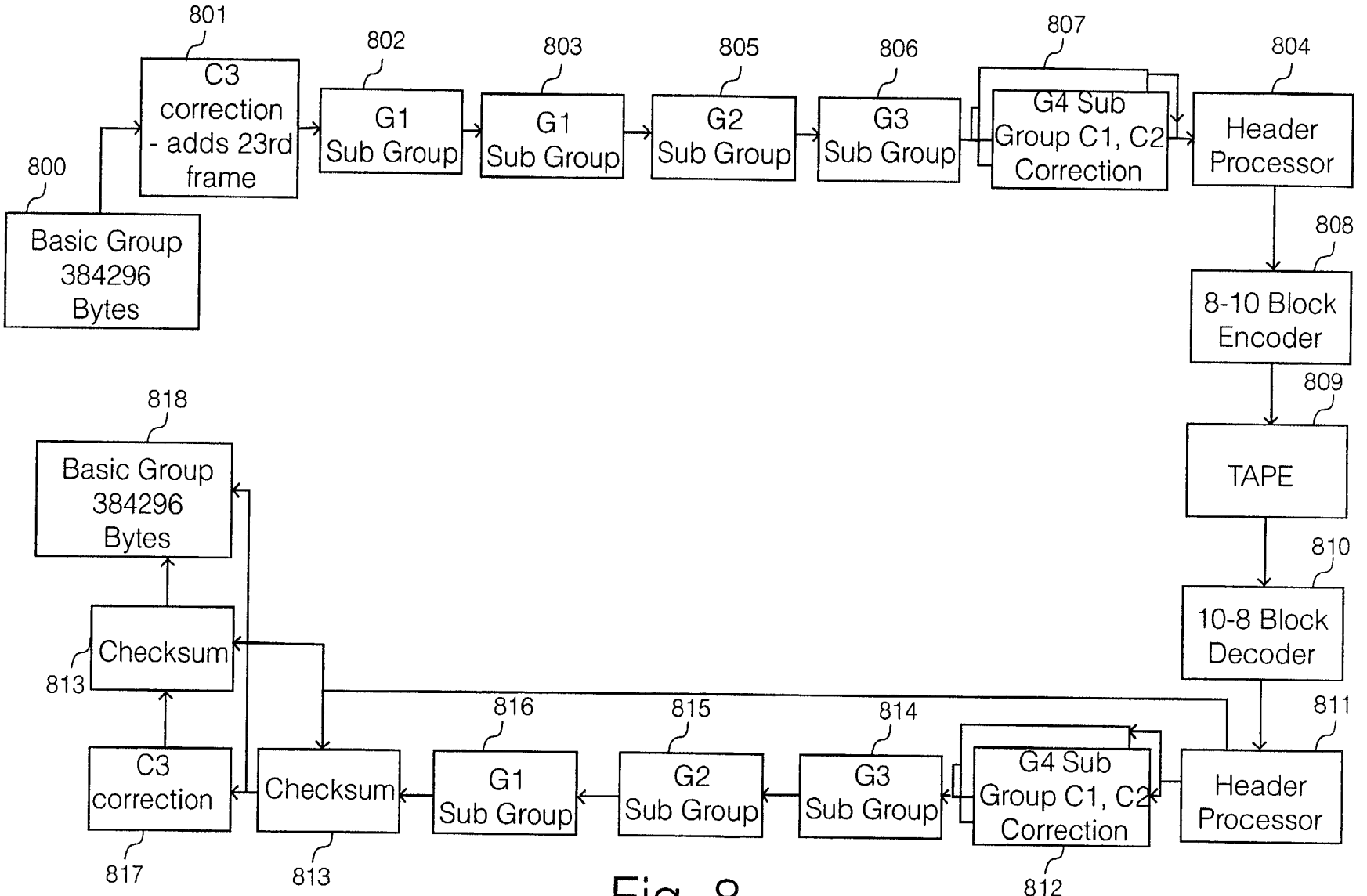

800
Basic Group 384296 Bytes
801
C3 correction - adds 23rd frame
802
G1 Sub Group
803
G1 Sub Group
805
G2 Sub Group
806
G3 Sub Group
807
G4 Sub Group C1, C2 Correction
804
Header Processor
808
8-10 Block Encoder
809
TAPE
810
10-8 Block Decoder
811
Header Processor
812
G4 Sub Group C1, C2 Correction
814
G3 Sub Group
815
G2 Sub Group
816
G1 Sub Group
813
Checksum
817
C3 correction
813
Checksum
818
Basic Group 384296 Bytes

Fig. 8

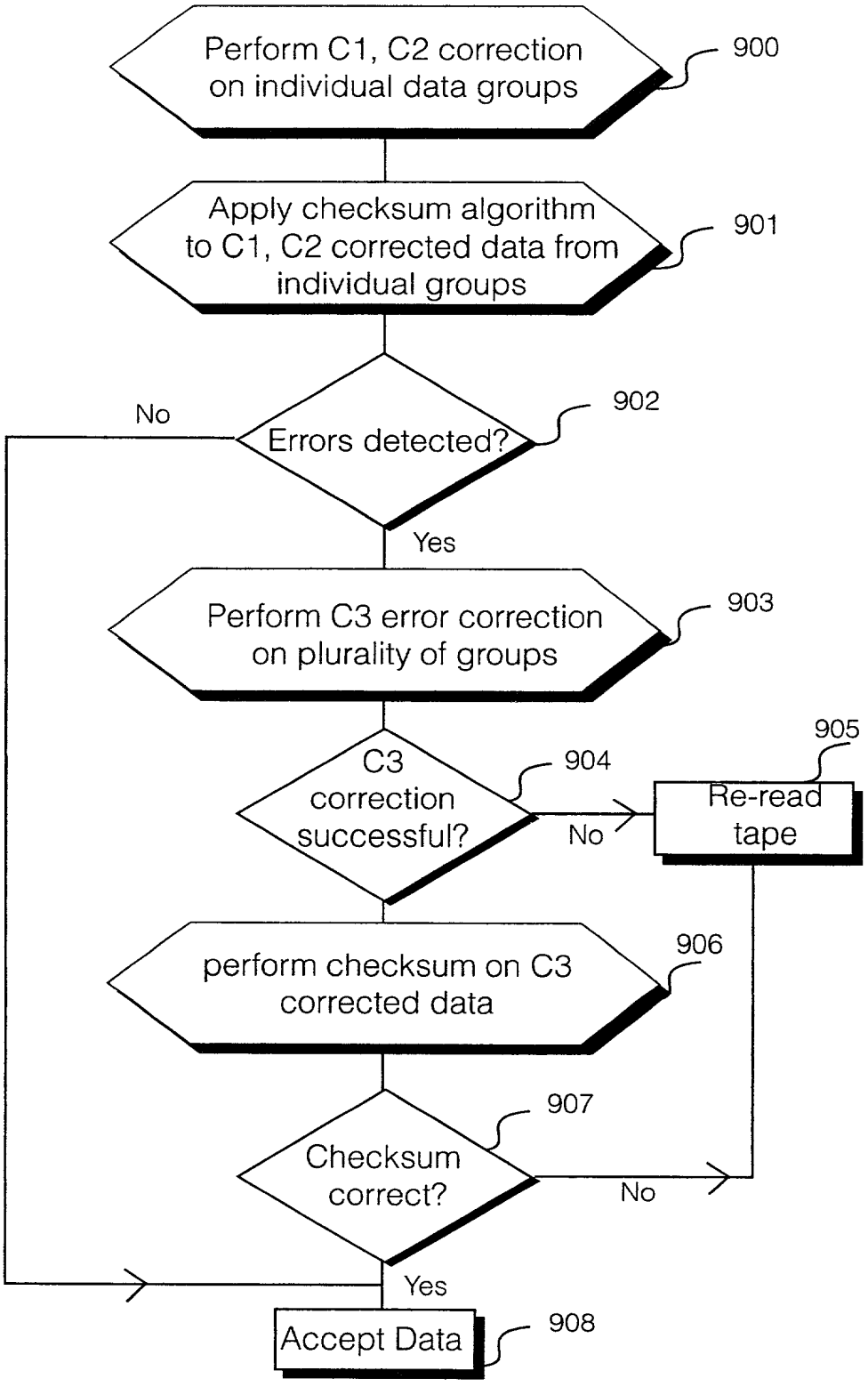

Perform C1, C2 correction on individual data groups
900
Apply checksum algorithm to C1, C2 corrected data from individual groups
901
Errors detected?
902
No
Yes
Perform C3 error correction on plurality of groups
903
C3 correction successful?
904
No
Re-read tape
905
perform checksum on C3 corrected data
906
Checksum correct?
907
No
Yes
Accept Data
908

Fig. 9

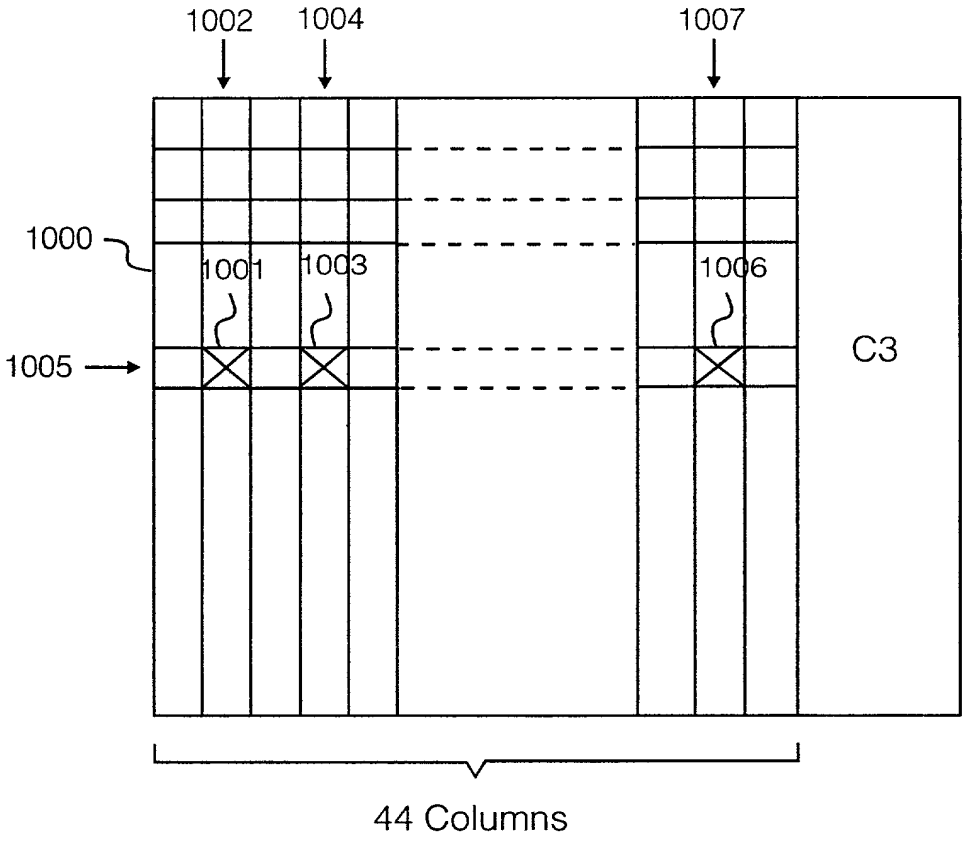
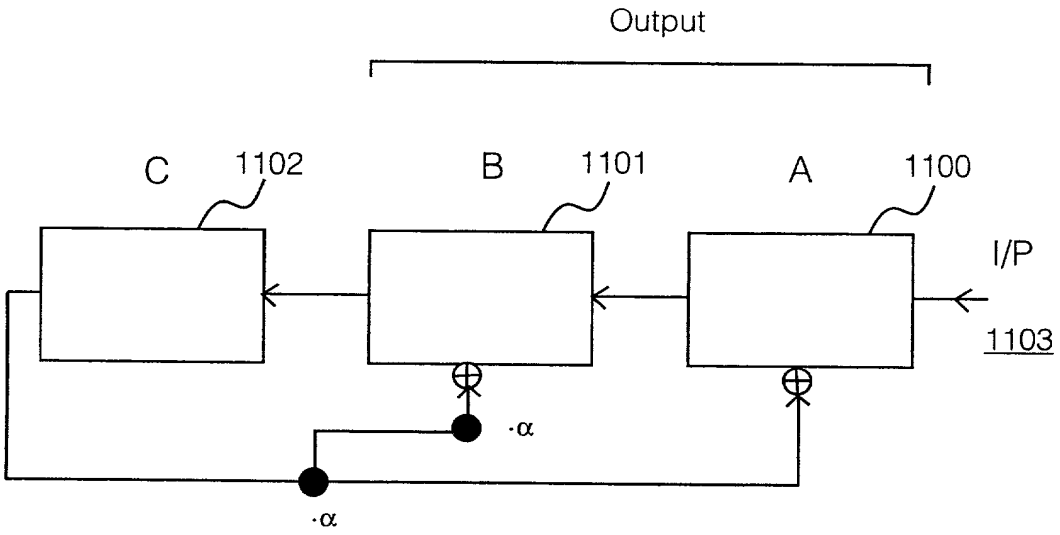


Fig. 10



·α on a

a = a7, a6, a5, a4, a3, a2, a1, a0

a' = a6, a5, a4, a3, a2, a1, a0, O

If a7 = 1 then a'= a' XOR 00011101

Output = a'

Fig. 11

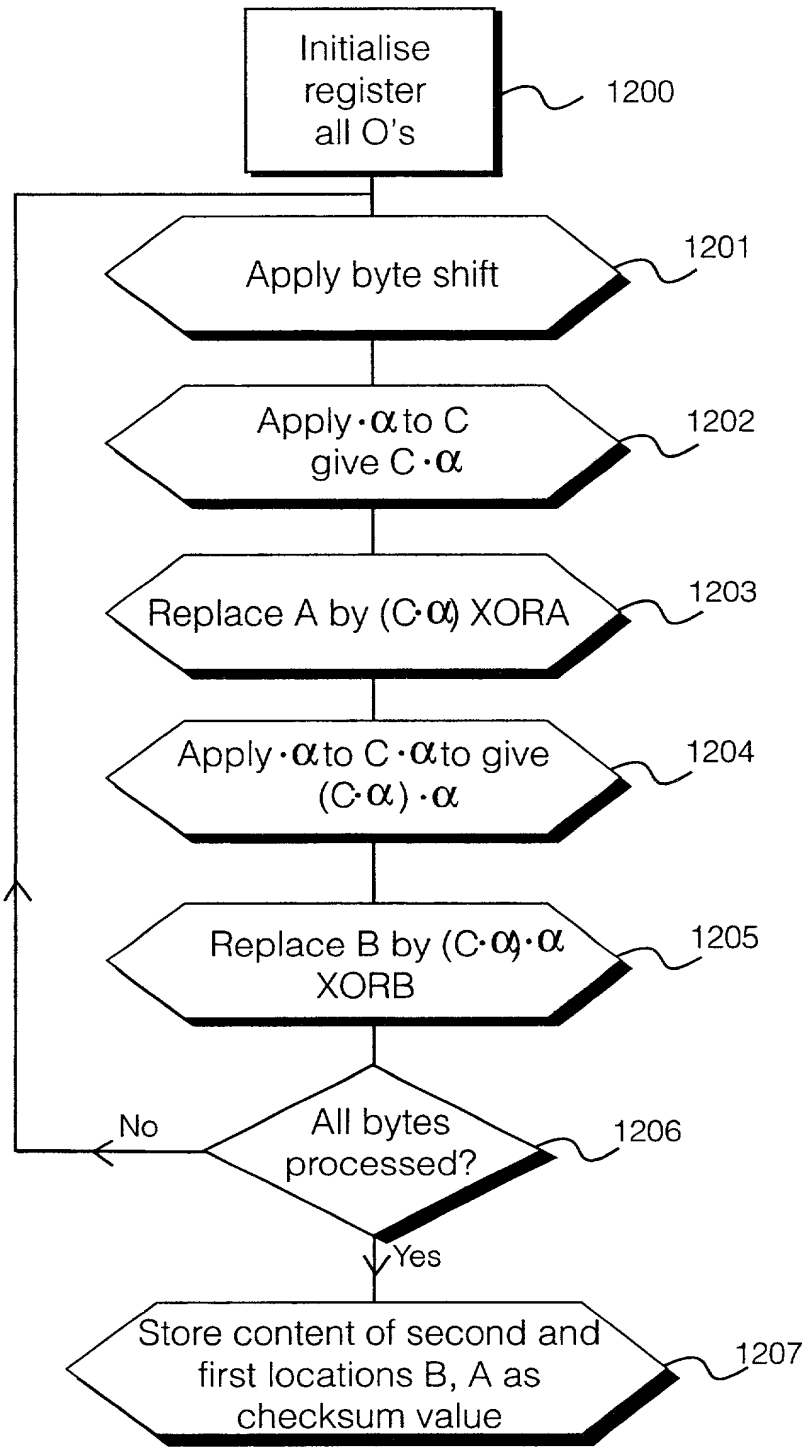

Initialise register all O's
1200
Apply byte shift
1201
Apply ·α to C give C·α
1202
Replace A by (C·α) XORA
1203
Apply ·α to C·α to give (C·α)·α
1204
Replace B by (C·α)·α XORB
1205
All bytes processed?
1206
No
Yes
Store content of second and first locations B, A as checksum value
1207

Fig. 12

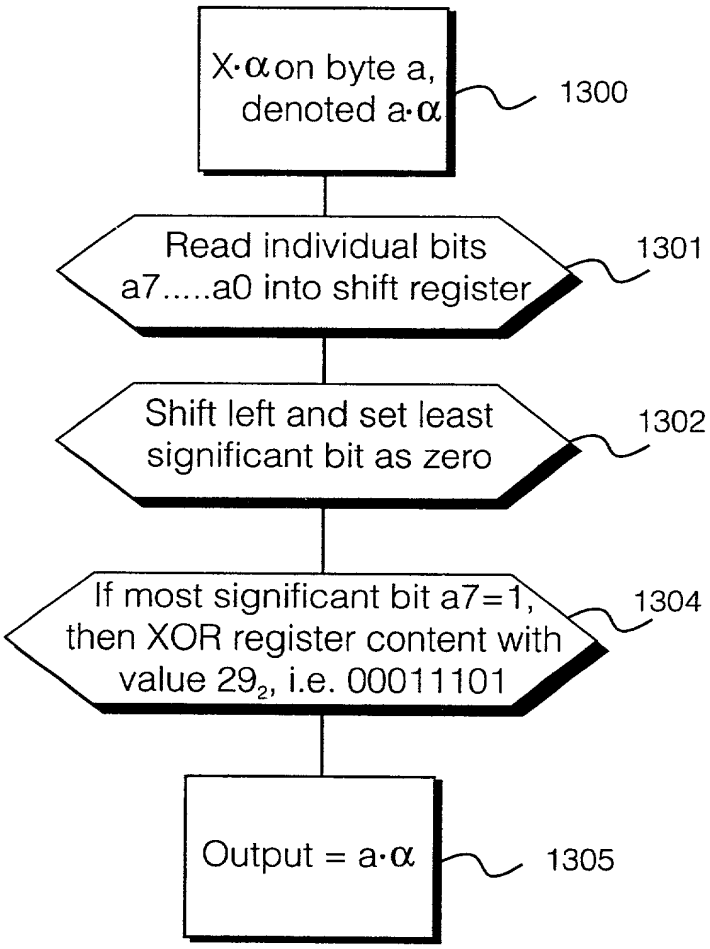

X·α on byte a, denoted a·α
1300
Read individual bits a7.....a0 into shift register
1301
Shift left and set least significant bit as zero
1302
If most significant bit a7=1, then XOR register content with value 29_2, i.e. 00011101
1304
Output = a·α
1305

Fig. 13